CASE REPORT

Intussusception in the elderly

Daryl Subramaniam,¹ Nicholas Culshaw,¹ Fiona Langlands,¹ Lesley Apthorp²

¹Department of General Surgery, East Sussex Healthcare NHS Trust, St Leonards-on-Sea, East Sussex, UK
²Department of Radiology, East Sussex Healthcare NHS Trust, St Leonards-on-Sea, East Sussex, UK

Correspondence to

Dr Daryl Subramaniam,
 daryl.subra@gmail.com

SUMMARY

We present the case of an 82-year-old Caucasian lady with a 16-day history of colicky lower abdominal pain and reduced appetite. When presenting to hospital she was haemodynamically stable with no fever. Examination revealed a soft but tender abdomen with normal bowel sounds. No masses or hernias were present. Per-rectal examination revealed an empty rectum. Investigations showed raised inflammatory markers, white cell count 11.9 and C reactive protein 24, in addition to which she had dilated loops of small and large bowel on the abdominal radiograph. The patient underwent an emergency laparotomy where a mass in the descending colon was found to be intussuscepting into the proximal sigmoid colon for which a Hartmanns procedure was performed. Histopathology confirmed a Dukes B T3 N0 Mx adenocarcinoma.

BACKGROUND

Adult intussusception is rare in comparison to paediatric cases. Only 5% of all intussusceptions occur in adults.¹

Late presentation and lack of specific clinical features contribute to delayed diagnosis and treatment of the disease. Consequently, 77% of adults with intussusception are found to have associated bowel gangrene.² In addition, 54–69% of cases will be caused by a bowel malignancy.³

We present this case report to help increase awareness of the presenting symptoms demonstrated by patients within the adult population. We also highlight the most effective investigations with typical findings explained and discuss the recommended treatment options available.

CASE PRESENTATION

An 82-year-old retired nurse presented with a 16-day history of abdominal pain that was initially an 'all-intense, colicky pain' in her lower abdomen that felt like a 'period pain'. Episodes typically would start in the middle of the night without any noticeable triggering factor, last for a few hours and then resolve spontaneously. In addition, her appetite was reduced with no associated nausea or vomiting. Bowels were open in between episodes of pain.

The patient saw her general practitioner (GP) 1 day after the pain first started. Initially she was treated conservatively with simple analgesia prescribed by the GP and the pain appeared to settle.

Ten days following this, the pain started again as a 'more severe, continuous gripping pain'. Her appetite was markedly reduced, she felt fatigued and had stopped opening her bowels or passing flatus.

Her medical history was significant for osteoporosis and a left-sided Colles fracture earlier in the year. Her previous operations included incision and drainage of a breast abscess and tonsillectomy. Her father was known to have carcinoid syndrome. She had three children all of whom were healthy.

The patient was a non-smoker with only minimal alcohol consumption.

INVESTIGATIONS

The abdominal radiograph (figure 1) revealed mildly dilated small bowel loops and a moderately dilated ascending colon. The probable transition point could be seen within the proximal part of the descending colon. In addition a tubular opacity starting from the transition point of the obstruction could be seen. The maximum diameter of this tubular structure measured approximately 7.7 cm. The appearance was consistent with a thickened wall of the descending colon.

A CT pelvis and abdomen with contrast scan was performed on the day of admission.

There was thickening of the distal descending colon with a loop of sigmoid colon seen entering the lumen of the descending colon. This caused the characteristic 'target sign' seen in figure 2 with the outer rim composed of oedematous descending

Figure 1 Plain abdominal radiograph demonstrating dilated transverse colon up to abrupt cut-off at proximal descending colon (white arrow). The maximum diameter of the distal part of the transverse colon measured approximately 9.8 cm. Note also the presence of dilated small bowel loops (black arrow).

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Figure 2 Axial CT. Characteristic 'target sign' demonstrated with outer rim composed of oedematous large bowel (white arrow) and the darker, central portion consisting of mesenteric fat-enhancing (white) mesenteric vessels (black arrow).

colon and the darker, central portion consisting of mesenteric fat enhancing (white) mesenteric vessels. Further distal to this, the sigmoid colon could be seen entering the lumen of the descending colon causing the characteristic 'bowel within bowel' appearance (figure 3) and 'sausage sign' (figure 4). The rectum was seen to be distended with fecal matter (figure 4).

The transverse and the ascending colon were dilated. The transverse diameter of the caecum measured 8.7 cm. There was no definite evidence of free gas or fluid in the abdomen or pelvis.

Figure 3 Axial CT. Present is the characteristic 'bowel within bowel' appearance of the intussusceptum (black arrow) within the intussusciens (white arrow). Image shows mesenteric fat and enhancing vessels within the intussusception.

Figure 4 Coronal CT image. Demonstrated is the sausage-shaped intussusception (white arrow). Also shown is the rectum distended with fecal matter (black arrow).

The rest of the solid abdominal viscera were normal in appearance. There was no evidence of significant abdominal or pelvic lymphadenopathy. The scanned lung bases were clear. Bone review was unremarkable.

In conclusion findings were suspicious of a retrograde sigmoid intussusception with no evidence of perforation.

DIFFERENTIAL DIAGNOSIS

Obstructing colonic cancer.

CONSTIPATION

- ▶ Volvulus
- ▶ Diverticular inflammatory mass
- ▶ Gastroenteritis
- ▶ Tubo-ovarian pathology

Figure 5 Resection of descending colon tumour intussuscepting into proximal sigmoid colon. The specimen measures 230 mm in length with an attached omentum measuring 150x80 mm (black arrow). The intussusceptum can be seen to be congested (white arrow). Histological assessment showed that massive submucosal oedema without necrosis.

TREATMENT

The following morning the patient was consented for an exploratory laparotomy +/- stoma formation. A midline incision was made. The immediate finding on entering the peritoneal cavity was grossly dilated large bowel from the caecum to the descending colon. As the caecum was tense it was decompressed using a needle and suction technique to avoid perforation. After decompression was complete, an approximately sized 12×10 cm descending colon tumour was found to be intussuscepting into the proximal sigmoid colon. The distal sigmoid colon was noted to be full of faeces.

A Hartmann's procedure was subsequently performed. The left colon was mobilised off the splenic flexure. The segment of left colon containing the tumour was resected using a linear cutter (TLC-75-stapler—Ethicon, Norderstedt). The specimen was then sent for histology (figures 5 and 6).

A polydioxanone suture was used to close the rectus sheath. The colostomy was formed with vicryl sutures. In total 20 ml Marcain 0.5% was infiltrated into the wound. Clips were used to close the skin.

OUTCOME AND FOLLOW-UP

Subsequent histopathology confirmed a colonic adenocarcinoma Duke's B T3 N0 Mx to be at the apex of the intussusceptum in the descending colon specimen. The intussusceptum showed congestion and significant submucosal oedema without necrosis.

Figure 6 Resection specimen of descending colon showing 60×50×30 mm fungating polypoid tumour (black arrow) at the apex of the intussusceptum. Histological analysis showed that the tumour to be a T3, N0, Mx Duke's B carcinoma.

The left colonic mesentery was congested, oedematous and had features of mild acute inflammation but was free of tumour.

The patient made a good postoperative recovery and was discharged home with dietician input.

She was seen in an outpatient clinic 2 months later and appeared to be making a good recovery with her appetite returning. She has declined chemotherapy treatment.

DISCUSSION

Intestinal intussusception occurs when a portion of the gastrointestinal tract invaginates into a neighbouring portion of bowel (the intussusceptum) causing a surrounding oedematous layer of bowel to form on the outside (intussusciens). It was first described by Barbette of Amsterdam.⁴ The first surgeon to operate on a child with intussusception was Sir Jonathan Hutchinson in 1871.⁵

The condition is rare in adults with an incidence of 2–3/1 000 000/year.⁶

It is thought that any lesion in the bowel wall or irritant within the lumen that alters normal peristaltic activity is potentially a precipitating factor for intussusception.⁷ In 54–69% of adult cases, the precipitating lesion will be a bowel malignancy.³ Other causes include post-trauma, Meckel's diverticulum, post-operative adhesions, lipomas and adenomatous polyps.⁸

As bowel intussusception presents much less commonly in adults than children the specific features in the history are less well known. The classical paediatric presentation triad of abdominal pain, palpable abdominal mass and bloody stool is seen in only 9.8% of adult cases.⁷ The symptoms and signs currently described in the literature are very non-specific: nausea, gastrointestinal bleeding, change in bowel habits, vomiting and constipation.⁸ Because of the high percentage of cases resulting in bowel strangulation, the adverse effects of delayed diagnosis and treatment can be potentially life threatening.

The defining feature in the history of this particular case is the ongoing intermittent abdominal pain that appeared to settle quickly with simple analgesia only to start off again 10 days later. The current literature suggests that pain is the commonest symptom being present in 71–90% of patients.⁹ Yalamarthi and Smith¹⁰ (2012) note that with intussusception patients 'the most important characteristic of pain is its periodic, intermittent nature, which makes the diagnosis elusive and accounts for the delay in making the diagnosis, with only half the cases being diagnosed before operation'.

The typical ongoing nature of the pain history in intussusception is demonstrated in a retrospective review of 41 cases by Wang *et al*⁷ with 51.2% of patients presenting with symptoms lasting for longer than 2 weeks. Azar and Berger¹¹ found that the mean duration of symptoms before presentation was 37.4 days.

Suggestive histories should highlight the need for urgent imaging. Plain abdominal films may usually show signs of bowel obstruction or the intussusception may appear as a soft tissue mass surrounded by a crescent of gas. This most commonly appears in the right hypochondrium.¹² Upper gastrointestinal contrast and barium enema studies may show characteristic 'coil-spring' appearances. Ultrasonography may show the 'doughnut' sign on the transverse view.

Abdominal CT scanning is regarded as the most useful imaging technique, with a diagnostic accuracy of 58–100%. Characteristic features include oedematous bowel wall caused by the intussusceptum telescoping into the intussusciens; mesentery in the lumen that results from the intussusceptum bringing mesenteric fat along the intussusciens; and the 'sausage sign' and 'target sign' that are caused by a combination of the

thickening of the bowel wall and the entrapped mesenteric fat representing a low-attenuation fatty mass.¹⁰ CT scanning may also help delineate the correct cancer stage if indeed the intussusception had been caused by an underlying malignancy.⁸

Owing to the high risk of a malignant cause in cases involving the large bowel, surgery with primary resection of the intussusception should ideally be performed in all patients.¹ This procedure can also be performed laparoscopically if the necessary equipment and expertise is available.⁸ Reduction of the intussusception should not be attempted at operation as there is a theoretical risk that malignant cells may be disseminated intraluminally during this procedure.¹⁰ Simple gas or intraoperative reduction should, however, be safe if there is no pathological cause found for the intussusception.¹³

Learning points

- ▶ Although the overall incidence of intussusception in adults is low, it does account for approximately 5% of cases of intestinal obstruction.¹² Currently the condition is most commonly diagnosed only at laparotomy after the patient has presented with an emergency bowel obstruction.¹⁰
- ▶ Unlike typical bowel obstruction the clinical features of bowel intussusception in adults are commonly non-specific and ongoing. In total, 71–90% of patients with intussusception present with ongoing abdominal pain.⁹ In the outpatient setting, adult patients presenting with intermittent abdominal pain that settles relatively quickly should alert doctors to consider the possibility of intussusception in their differential diagnosis. This can facilitate early CT scanning and operative treatment that can potentially reduce the number of patients presenting as an emergency with bowel obstruction.
- ▶ Although plain abdominal films, barium enemas and ultrasonography may show features of intussusception, the diagnostic accuracy and sensitivity of CT scanning currently makes it the most useful commodity in the diagnosis and subsequent treatment planning of intussusception.
- ▶ Early surgical intervention is required soon after diagnosis due to the high occurrence of bowel gangrene.² In total, 54–69% of cases of adult intussusception will be caused by a bowel malignancy,³ most commonly in the ileo-colic region¹⁴ thus necessitating an adequate cancer resection by an experienced surgeon. Attempts at reduction of the intussusception before resection should only be attempted if no pathological cause is present in the bowel.

Competing interests None.

Patient consent Obtained.

Provenance and peer review Not commissioned; externally peer reviewed.

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